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2021

Online at <https://mpra.ub.uni-muenchen.de/110262/>
MPRA Paper No. 110262, posted 20 Oct 2021 05:17 UTC

A Study on Impacts of the Institutional Environment and Climate Change on Sustainability of Agriculture – the Case of Bulgaria

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Abstract

Achieving diverse goals of sustainable development greatly depends on the specific socio-economic, institutional and natural environment in a particular country, industry, region, community, etc. Despite its importance, in Bulgaria, like in other East European countries, there are very few empirical studies on impact(s) of institutional environment and climate change on agrarian sustainability. This paper incorporates the interdisciplinary New Institutional Economics, and assesses the impact of major elements of institutional environment and climate change on agrarian sustainability in Bulgaria. First, the methodological framework is outlined. After that the impacts of various components of institutional environment and climate change on agrarian sustainability are evaluated. Finally, conclusions with implications for further research are presented. The study is based on in-depth interviews with managers of “representative” market-oriented farms of different juridical type, size, specialization, and ecological and geographical location. Institutional components most contributing to improvement of agrarian sustainability at current state of development are: personal connections, available information for prices, markets, innovations, etc., established reputation, existing trust, and existing possibilities for free contracting. Factors mostly deterring sustainable agrarian development are: existing conflicts over agrarian resources, investment possibilities and obstacles, existing monopoly and power positions, and climate change. Studies of this type are to be further expended as precision and representation increased through improving methods, data sources, and cooperation with interested parties.

Key words: Governance, Institutional environment, Climate change, Agrarian Sustainability

Introduction

Achievement of diverse economic, social, environment conservation, intergenerational, etc. goals of sustainable development greatly depend on the specific institutional, market and natural environment in a particular country, industry, region, community, etc. (Bachev, 2010; Furuboth and Richter, 1998; North, 1990; Williamson, 1996). Having in mind the importance of agrarian sector (in terms of employed resources, contribution to individuals and social welfare, positive and/or negative impacts on environment, etc.), the issue of improving the system of agrarian governance is among the most topical challenges round the globe (Bachev, 2010; Chartzoulakis and Bertaki 2015; Clapp, 2016; EC, 2017; Dudu and Çakmak, 2018; Eliane, 2014; Higgins and Lawrence, 2005; Gilolmo and Lobo, 2016; Jat et. Al. 2017; Kröger, 2016; OECD, 2015; Serra and Duncan, 2016; Nair, 2010; UNEP, 2008; UN, 1992, 2015; Van Koppen et al. 2009). Nevertheless, research on the efficiency of agrarian sustainability governance is at the beginning stage due to the “newness” of the problem, and emerging new challenges at current phase of development (climate change, environmental pollution and degradation, competition for natural resources, globalization of activities and impacts), fundamental institutional modernization during past decades, “lack” of long-term experiences, relevant methods and data, etc.

Most studies in the area are focused on formal governance modes and mechanisms (Chartzoulakis and Bertaki 2015; Eliane, 2014; Higgins and Lawrence, 2005; Serra and Duncan, 2016; Kröger, 2016; Nair, 2010; OECD, 2015) while the important informal institutions are not analyzed. Research is commonly restricted to a certain form (contract, cooperative, initiative, public program), or a management level (farm, eco-system, region) (Chartzoulakis and Bertaki 2015; Eliane, 2014; Higgins and Lawrence, 2005; Gilolmo and A. Lobo, 2016; Kazandjiev, 2017; Kröger, 2016; Serra and Duncan, 2016; Nair, 2010; Van Koppen et al. 2009) without taking into consideration interdependency, complementarities and competition of different governing structures as widely used complex forms (multi-lateral, multi-level, reciprocal, interlinked, hybrid) usually ignored. One-dimensional and uni-sectoral analyses are broadly used separating agrarian management from the governance of environmental and overall households and rural activities. Most studies concentrate on “production” costs ignoring significant transaction costs associated with identification, assignment, protection, exchange and disputing of property rights and rules. “Normative” (to ideal or model in other countries) rather than a comparative institutional approach (between feasible alternatives in the specific socio-economic and natural conditions) is employed. Uni-disciplinary approach dominates (“pure” economic, ecological, juridical, political, etc.) preventing a proper understanding of driving factors (“logic”) and full consequences (multiple effects, costs, risks) of a particular governance choice. Consequently, adequate understanding and assessment of the system of agrarian governance and its contribution to agrarian sustainability is impeded, and the effective assistance to public policy and private (individual and collective) strategy formation cannot be given.

In Bulgaria, with very few exceptions (Bachev, 2010; Georgiev, 2010; Terziev and Radeva, 2016), there are no empirical studies on impact(s) of institutional environment on agrarian sustainability. Few studies on climate change impacts take no account on counter effect of institutional arrangements and potential for adaptation though modernization of governance (Kerezieva, 2016; Kazandjiev, 2017). This paper incorporates the interdisciplinary New Institutional Economics framework (combining Economics, Organization, Sociology, Law, Political and Behavioral Sciences), and assesses the impacts of major elements of external institutional, environment and climate change on agrarian sustainability in Bulgaria. First, methodological framework is outlined. After that the impacts of various components of institutional environment and climate change on agrarian sustainability evaluated. Finally, conclusions with implications for further

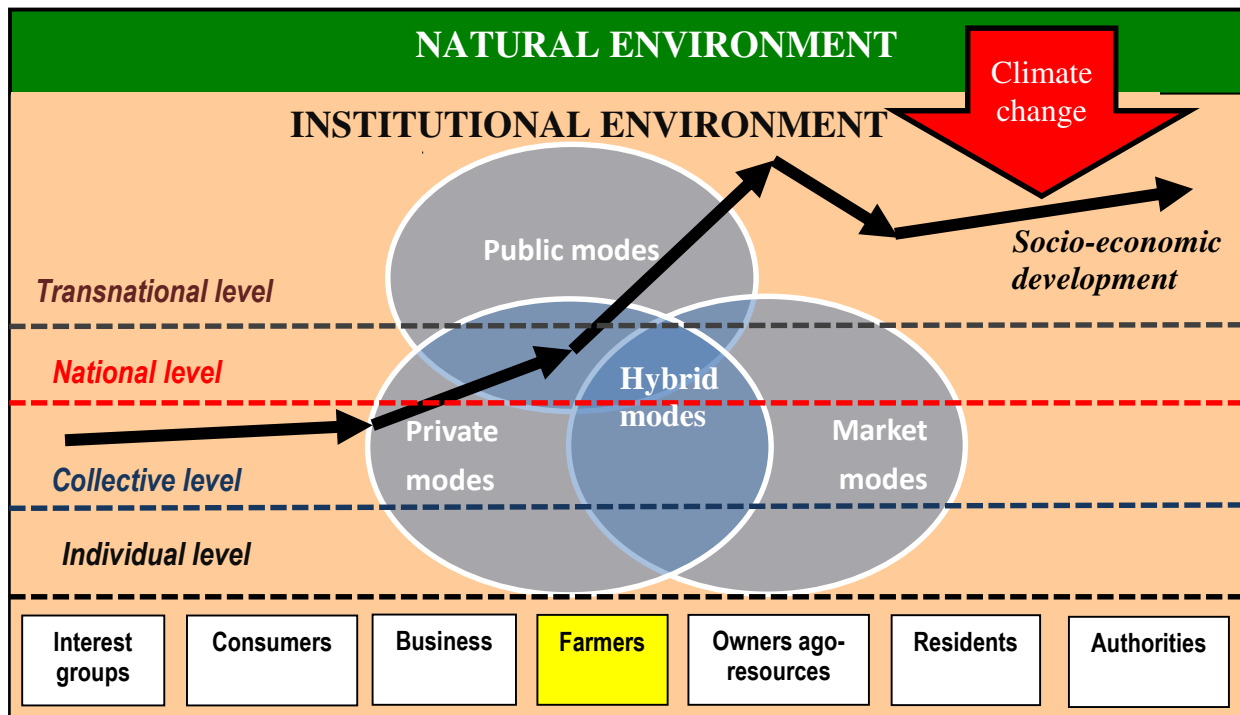
research are presented. Critical impacts of private, collective, public and hybrid modes of governance on agrarian sustainability is presented in another publication (Bachev and Terziev, 2018).

Materials and Methods

In academic literature and managerial practice agrarian sustainability is defined in a various way with no agreement about what agrarian sustainability and how to evaluate it (Raman, 2006; Sauvenier et al., 2005). In this study sustainability is approached as a “system characteristic” and the ability of agriculture to maintain its economic, ecological and social functions over a long period of time. In any case, maintaining and improving multiple functions of agriculture requires an effective social order (“good governance”). The later represent a system of “human created” mechanisms and forms regulating, coordinating, stimulating, and controlling behaviors, actions and relations of individual agents at different levels (Bachev, 2010). The individual farms are the main organizational and production units in agriculture managing resources, technologies and activity, and maintaining social, economic and ecological functions of the sector. Thus, farms and farm organizations are the major elements of the system of governance of agrarian sustainability (Figure 1). Other agents also participate imposing appropriate conditions, standards, norms, demands, etc. - agrarian resource owners, inputs suppliers, buyers of farm produce, consumers, residents and visitors of rural areas, interests groups, state and local authorities, international organizations, etc.

The system of governance of agrarian sustainability includes a number of distinct mechanisms and modes, which manage behavior and actions of individual agents, and eventually (pre)determine sustainability level: First, *institutional environment* (“rules of the game”) - that is the distribution of rights and obligations between individuals, groups, and generations, and the system(s) of enforcement of rights and rules (Furuboth and Richter, 1998; North, 1990). The spectrum of rights comprises material assets, natural resources, intangibles, activities, working conditions, remuneration, social protection, clean environment, food and environmental security, intra- and inter-generational justice, etc. Enforcement of rights and rules is carried out by the state, community pressure, trust, reputation, private modes, or self-enforced by agents. A part of rights and obligations is constituted by the formal laws, regulations and standards, court decisions, etc. There are also important informal rights and rules determined by tradition, culture, religion, ideology, ethical and moral norms, etc. Institutions and institutional modernization create unequal incentives, restrictions, costs, and impacts for different aspects of agrarian sustainability. In the specific socio-economic, institutional, natural etc. environment the „rational“ agents tend to design and use “most effective” market, private, collective, hybrid etc. modes of governance maximizing their benefits and minimize overall costs (Bachev, 2010; Williamson, 1996). However, if property rights are not well-defined or enforced, that leads to inefficient and unsustainable exploration of natural and other resources, constant conflicts among interested parties, and low economic, social and ecological efficiency and sustainability.

Figure 1. System of agrarian governance



Source: author

Second, *market modes* (“invisible hand of market”) – those are various decentralized initiatives governed by the “free” market price movements and market competition – e.g. spotlight exchange of resources, products and services; “classical” purchase contract, lease or sell contract; trade with high quality, organic, etc. products and specific origins, agrarian and ecosystem services, etc. Agents use (adapt to) markets profiting from specialization of activity and beneficial exchange, while their voluntary decentralized actions “direct” overall distribution of resources between diverse activities, sectors, regions, ecosystems, countries. However, there are many examples for “market failures” (missing markets, monopoly or power relations, positive or negative externalities, disproportion in incomes, working and living conditions) leading to unsustainable agrarian development.

Third, *private modes* (“private or collective order”) – diverse private initiatives, and special contractual and organizational arrangements (long-term supply and marketing contracts, voluntary eco- and social actions, codes of behavior, partnerships, cooperatives, brands and trademarks, etc.). Private modes negotiate “own rules” or accept (imposed) existing private or collective order, transfer existing rights or gives new rights to counterpart(s), and safeguards agents rights. A great part of agrarian activity is managed by voluntary initiatives, private negotiations, “visible hand of the manager”, or collective decision-making. Nevertheless, there are many examples of private sector deficiency (“failures”) in governing of a socially desirable activity such as environmental conservation, preservation of traditional productions, protection and development of rural areas, etc.

Forth, *public modes* (“public order”) – various forms of public (community, government, international) interventions in market and private sector such as public guidance, regulation, assistance, taxation, funding, provision, property right modernization, etc. The role of public governance increases along with intensification of activity and exchange, and growing interdependence of socio-economic and environmental activities. In many cases, effective management of individual behavior and/or organization of certain activity through market

mechanisms or private negotiation takes a long time, and is very costly, could not reach a socially desirable scale, or be impossible. Thus a centralized public intervention could achieve a desirable state faster, cheaply or more efficiently. However, there are a great number of “bad” public involvements (inaction, wrong intervention, over-regulation, mismanagement, corruption) leading to significant problems of sustainable development in Bulgaria and around the globe.

Fifth, *hybrid forms* – some combination of other modes like public-private partnership, etc.

Depending on the efficiency of specific system of governance “put in place” individual farms, agrarian subsectors, regions and societies achieve quite dissimilar results in socio-economic development and environmental protection, and there are diverse levels and challenges in economic, social and ecological sustainability (Bachev, 2010). Efficiency of the specific system of governance of agrarian sustainability eventually finds expression in certain level and dynamics of the social, economic, ecological and integral sustainability of agricultural systems of different type (farm, industry, agro-ecosystem, region, etc.). Accordingly, a high or increasing agrarian sustainability means a high efficiency of the system of governance, and vice versa. In order to evaluate the governance efficiency a holistic system for assessing the social, economic, ecological and integral sustainability is applied, presented in other publications (Bachev, 2016; Bachev et al., 2016, 2017).

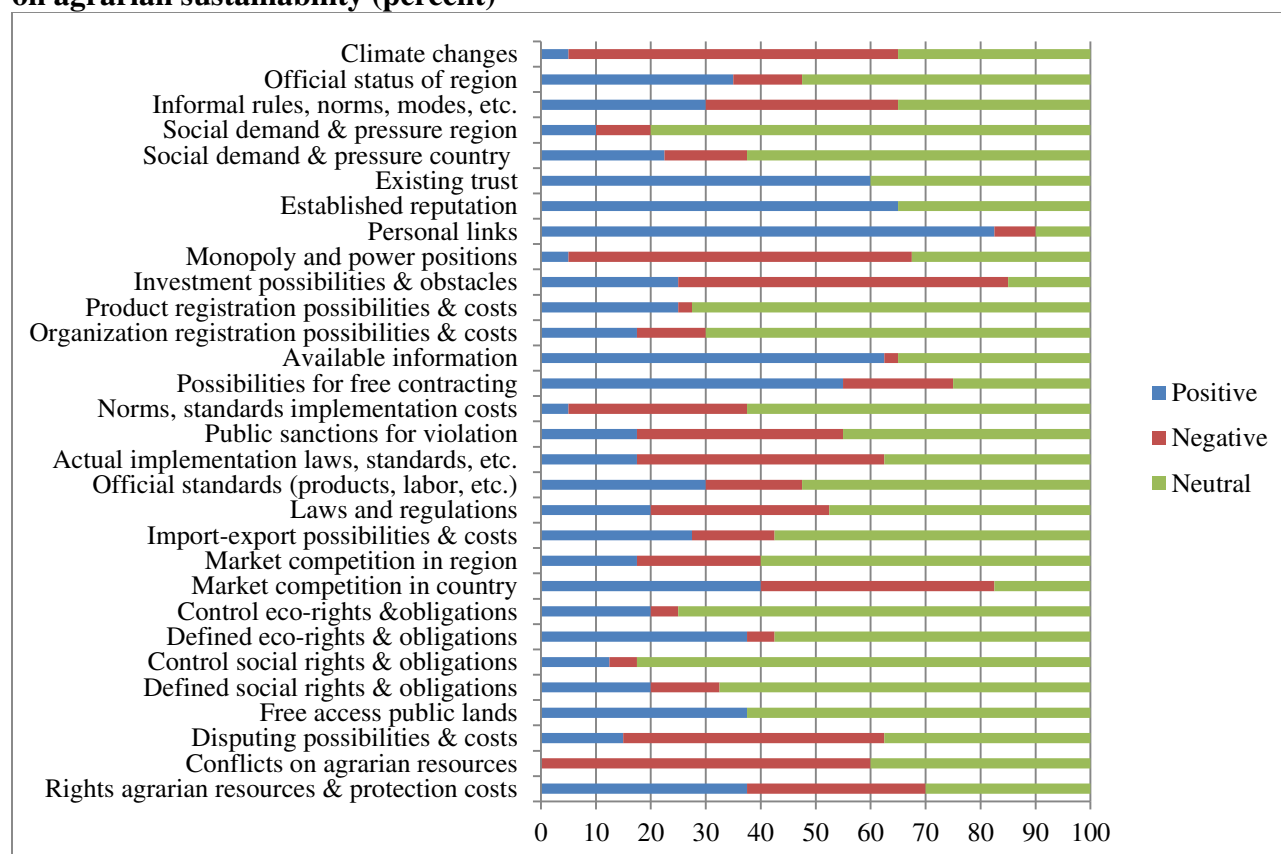
For identification and assessment of important components of institutional environment and the impact of climate change in-depth interviews was carried out with the managers of 40 “representative” market-oriented farms of different kind and location in 2017. In four administrative regions of the country identification of “typical” farms were made with the assistance of producers associations, authorities, processors, and service providers. Farms of different juridical types, sizes, production specialization, geographical and ecological locations were included as the structure and features of surveyed farms approximately correspond to the real structure of all farms in the regions.

The survey comprised multiple questions associated with various components and the impacts of governing system. Initially managers assessed the impact of each governing mode as “positive”, “neutral”, or “negative”. After that, the relations between managers “estimates” and the sustainability of respective farms are specified. “Behavioral” approach is used since there are no available “objective” statistical, monitoring, survey, etc. information about the impact of different institutions on agrarian sustainability. Besides, farm managers are most aware with the “efficiency” of dominating governance mechanisms and impact to agrarian sustainability in their specific conditions. For certain data the farm managers are the sole reliable source of information – e.g. personal ideology, preferences, and satisfaction, interlinked and complex forms, informal modes, sensibility and adaptation to outside factors. In order to diminish subjectivity, the “perceptions” of managers is complemented with “objective” evaluation of farms sustainability level, and correlation determined between the managers’ estimates on importance of governing mode and the actual sustainability level.

Results and Discussion

According to the interviewed farm managers the components of institutional environment having the greatest *positive* impact on agrarian sustainability are: „personal connections“ (82,5%), “available information for prices, markets, innovations, etc.” “(62,5%), “established reputation” (65%), “existing trust” (60%), and “existing possibilities for free contracting” (55%) (Figure 2).

Figure 2. Impacts of major elements of socio-economic, institutional and natural environment on agrarian sustainability (percent)



Source: interviews with farm managers, 2017

Personal connections are crucial factor for effective management of relations between different agents. They are particularly important when market mechanisms and private contracts “do not work” and there is no effective public (court) system for enforcement of private contracts and obligations. The favorable effect of personal connection for agrarian sustainability is indicated by all type of farms, subsectors of agriculture, and in different regions of the country. Personal links between close friends, relatives, partisans, etc. dominate both in the governance of commercial relations and various “relations” with public (state, municipal, non-governmental) organizations as well as in participation in collective organizations (marketing, inputs supply, eco-management, lobbying). For one tenth of the holdings personal connections have no importance for governing relations and agrarian sustainability. The latter are mainly large commercial farms for which market (prices, competition, trade conditions) rather than personal factors are essential for choosing a partner for exchange and coalition. A small part of managers (7,5%) indicates that domination of personal connections is a

negative factor for amelioration of agrarian sustainability. That governance often is associated with privilege (illegitimate) “inclusion” in public support programs or access to public resources by certain groups and individuals with “good connections” with authority at national or local level.

Quantity and quality of available information is an essential factor predetermining efficiency of sustainability governance. Favorable effect of the “system of provision” of information for effective governance of agrarian sustainability is indicated by all type of producers. Holdings of different size, specialization, etc. have unequal information needs and possibilities for access (collect, purchase) and process (skills, qualification, available experts) information. All farms underline that information they possess lead to improvement of agrarian sustainability or some of its aspects. Only 2,5% of farms suggest that available information for prices, markets, innovations, etc. is not sufficient or misleading, and negatively affect agrarian sustainability. Simultaneously, a good portion of farmers (35%) evaluate as neutral the importance of available information in relation to agrarian sustainability. Some holdings (small, subsistence, extensive) have no great information needs, while another part access to beneficial information (media, advisory and training system, consultants). Our survey also has found out that many farm managers have none or sufficient reliable information for important parameters related to agrarian sustainability such as: extent of erosion and pollution of soils, quality of ground waters, protected species, biodiversity, etc. in the region or area of their farms.

A good reputation is perceived as an important factor contributing to selection of an appropriate supplier, buyer or partner for joint initiatives. Agents having intention to stay longer in certain business and improve sustainability tend to invest in a “good name” farm or product reputation. On the other hand, “bad” social reputation gives a good signal for avoiding relations with undesirable agents and assists the effective governance. Favorable effect of that factor is equally reported by farms of different juridical type, size, specialization, and location. None of the investigated holdings suggests that information about/for built (good, bad) reputation hinders agrarian sustainability. At the same time, for a good fraction of holdings (35%) established reputation is not a factor affecting agrarian sustainability. Governance of diverse aspects of agrarian sustainability often require relations with new counterparts, for which there is no reliable reputation information (new business, regional, or country players). Thus, agents use other “faceless” control and protection mechanisms as collateral, recommendations, joint investments, short-term contracts, risk taking for a higher benefit, etc.

The state of trust between agents is an important factor facilitating relations and cooperation, and enhancing agrarian sustainability. A high trust affects favorably sustainability according to managers of different type of farms, subsectors, and regions. In agrarian and rural communities, a great portion of relations are between agents, knowing each other well with developed trust, reputation and personal connections. Such informal mechanisms and mutual interest to avoid or quickly resolve disputes govern effectively a significant part of activity and agents behavior. Most agreements in the sector are based on informal contracts, governed by “trust” and “good will” of parties. None of respondents indicates that the extent of trust is a negative factor for agrarian sustainability. Nevertheless, for a considerable fraction of holdings (40%) existing trust is a neutral factor for agrarian governance. Agrarian agents increasingly have to trade with unknown counterparts from other regions or countries without being able to use traditional interpersonal forms, based on good knowledge, personal connections, punishment from a bad reputation, etc. Besides, achieving or maintaining agrarian sustainability often requires a long-term efforts and involvements of a big number of participants (“collective actions”) in vast territories. The latter gives possibilities for opportunistic behavior of participants often leading to a failure of common projects. Many examples are presented when excess trust in bilateral or multilateral deals lead to failures, nonfulfillment of agreements, unrealized objectives and significant losses. That necessitates in agriculture increasingly

to be used other more efficient forms for governance such as formal contracts and agreements, market competition, assistance of a third party, dispute resolution through a court system, etc.

For a good proportion of surveyed farms following components of the institutional environment also positively contribute to agrarian sustainability: “provided rights on agrarian resources and the costs for protection of private rights” (37,5%), “free access to public lands” (37,5%), “defined environmental-rights and obligations” (37,5%), and “official status of the region” (35%).

Provided and well protected by the institutional arrangements private rights on agrarian resources (farmlands, pastures and meadows, material and intellectual assets, water sources, ecosystems) are important factors for effective exploitation of resources and sustainable development. According to the majority of farmers existing private rights and costs for their protection are of a primary importance for improvement of economic sustainability. System of private property rights has a high economic significance since it creates incentives for investment and effective utilization of resources. What is more, for many managers rights and rules in the sectors, modernized according to the EU standards, impact also positively social and environmental aspects of sustainability.

For every third of the surveyed farms existing private rights on agrarian resources and (a high) costs for their protection and exchange affect rather negatively different aspects of agrarian sustainability. Negative impact of that factor affects farms of various types with exception of those specialized in Vegetables, Flowers, and Mushrooms, Pigs, Poultry, and Rabbits, and Mix livestock, and located in Less-favored non-mountainous regions. These farms use smaller amount of own or rented lands (greenhouse and pig productions, middle size), have access to public meadows and pastures (grazing livestock), and no need to trade (purchase, lease) agricultural lands in large amount or intellectual agrarian products (origins, new crop varieties and technologies). Holdings, implementing intensive deals of farmlands with numerous land owners for exploration of scales and scopes, or using ownership as a loan collateral, are more affected by adverse consequences of the imperfect institutional framework (property rights identification) and costs for protection and transfer of private rights - a half of Cooperatives, 60% of farms in Mix crop-livestock, 40% in Field crops and Mix crops. That restricting institutional element is particularly critical for farms with smaller sizes (46,67%), having no potential (negotiation power, sufficient staff, access to lawyers) typical for large enterprises. Negative impact of that factor is quite strong for holdings in Mountainous regions (44,44%), where agrarian resources are limited and largely dislocated. A good part of farms in Less-favored mountainous regions (71,43%) and with Lands in protected zones and territories (40%) are influenced by negatively by the factor due to multiple restrictions for utilization of resources in such areas. For almost 30% of surveyed farms the rights on agrarian resources and protection costs have no importance (neutrality) in regards to agrarian sustainability. The latter means, that existing system of governance, and concentration, transfer and protection of agrarian resources in these holdings “work well” and do not prevent strategies and activities for sustainable development.

Provision of rights to use public resources (lands, pastures, water basins) is an important factor for their sustainable management and sustainable agrarian development of certain regions (mountainous, less-favored, with limited resources, inhabited) and subsectors (livestock, wild plants collection, etc.). None of the managers assesses that such an access impact negatively agrarian sustainability. Many small producers in mountainous and other regions complain, that public lands are not always fairly distributed as allocation of public (state, municipal) pastures and meadows in large sizes to individuals and groups “with connections” reported (on which huge public subsidies received). Such mode decreases social sustainability although it may not change (even increase) economic or eco-sustainability of land use. In many residential areas there are no sufficient municipal pastures creating series problems for sustainable development of many small-scale livestock breeders. In certain regions land and other resources with “free access” are not utilized sustainably due to

overuse (more that effective livestock number on a pasture, uncontrolled collection of wild plants and species) or underuse (lack of care for public resources due to the “absence” of owners).

Favorable impact of “free” rather than restricted or no access to public lands on agrarian sustainability is mostly reported by Physical Persons and holdings Predominately for subsistence (two third), Companies (36,36%) and Small size farms (40%), all farms specialized in Grazing livestock and Mix livestock, and majority in Mix crop-livestock (80%). Positive impact of that factor is confirmed by most farms located in Mountainous regions (77,78%), Less-favored non-mountainous regions (two third), and South-East region (57,14%), since mostly holdings with small size, growing grazing livestock, located in mountainous regions greatly take advantage of such opportunity. In these regions private agricultural lands are limited and there are large pastures and meadows widely provided for use to local farmers. Sometimes, bigger livestock holdings, with juridical status of companies, also use large municipal and state pastures and meadows appreciating the positive effect.

Well-defined and enforced environmental rights and obligations are a major element of the institutional structure, and important factors for sustainable exploitation of natural resources. In pre- and post-accession period to the EU a significant modernization of eco-rights has taken place, as standards harmonized with superior European levels, new rights and rules introduced for use and conservation of lands, waters, air, ecosystem services, etc., protection of biodiversity, landscape, animal welfare, etc. Favorable impact of that factor is assessed equally by holdings with different juridical type, specialization, size, and location. A big number of producers receive public subsidies requiring complying with modern eco-standards and norms. There are also special measures for assisting agro-ecology and organic production imposing higher eco-standards. Numerous norms and standards for protection and exploitation of natural resources as a whole or in certain regions are introduced (NATURA, less-favored, protected zones) mandatory for resource owners, farmers, and non-agrarian agents (industry, residents, visitors). Only a tiny section of surveyed farms (5%) indicate that the structure of regulated eco-rights and obligations is a negative factor for agrarian sustainability. The latter is consequence of the fact that adaptation of holdings to requirements of new eco-rules is associated with additional costs or considerable lost benefits. Majority of interviewed managers (57,5%) believe, that defined eco-rights and obligations are not important for agrarian sustainability, including its environmental aspect. Very often farmers are not familiar with or implement new eco rules and norms due to the lack of means and capability for adaptation or weak (practically impossible, too expensive, politically unacceptable) state control.

Region official status (rural, national park, resort, etc.) often provides some socio-economic, institutional and natural advantages for farmers generally or certain subsectors. The latter equally concerns farms of different juridical type, sizes, production specialization, ecological and geographical location. Usually farm’s location in favorable (resort, more developed, border) region gives socio-economics advantages like superior prices, guaranteed marketing, diversification in related and other activities (restaurant, hotel, ecosystem services, tourism). Location of holding in special (rural, less-favored, protected zones and territories) region gives opportunities for participation in various public support schemes and leads to improvement of agrarian sustainability. Nevertheless, for a good proportion of farms (12,5%), special status of the region has a negative impact on agrarian sustainability. Farm’s affiliation to such a region is associated with numerous comparative disadvantages (low productivity, superior costs, remoteness from markets, restrictions for resource utilization and activities) not compensated or insufficiently offset through public support, and compromising sustainability or some of its aspects. For the biggest fraction of holdings (52,5%), region’s official status is not essential for agrarian sustainability since they are not located in such regions, or their situation gives any benefits or solely associated with additional costs.

According to the surveyed farm managers agrarian sustainability is mostly adversely affected by the following institutional elements: “existing conflicts over agrarian resources” (60%), “possibilities and obstacles for investment” (60%), and “existing monopoly and power positions” (62,5%).

Conflicts usually obstruct efficient distribution and sustainable exploitation of agrarian resources, and are related with significant prevention and resolution costs. According to the managers that factor often considerably diminish economic sustainability, sometimes environmental sustainability, and occasionally social sustainability. Various conflicts associated with agrarian resources, have unequal effect on sustainability of different subsectors, regions, and type of farms. They are commonly related with strong interests for ownership acquisition or utilization of certain limited (valuable) agrarian resources by more parties – individuals, farms, related and unrelated businesses, powerful groups, etc. In certain cases, there are strong conflicts, related to strategies of some large groups for “legitimate” acquisition of major resources (lands, facilities, enterprises) from smaller producers through various schemes (pressure, unfair competition, severe credit, lawsuits and bankruptcy). There are many instances of conflicts, caused by not or badly defined rights of ownership, direction, utilization, etc. of some resources or by their “public” (good) character - new technologies, state and municipal lands, water sources, ecosystem services, critical infrastructure, etc.

To the greatest extent conflicts over agrarian resources affect negatively Cooperatives (83,33%) and Physical Persons (73,33%). Adverse impact of that factor to a lesser extent is faced by firms of various types, possessing (using) more efficient mechanisms for prevention or effective overcoming of conflicts on agrarian resources. Despite that, a good proportion of Sole Traders (37,5%) and Companies (44,45%) evaluate, that conflict on agrarian resources impact negatively agrarian sustainability. The negative impact of conflicts increases along with the reduction of farm size, and it is typical for Small (73,33%), semi-market (66,67%), and Middle sizes (57,14%) holdings. A considerable portion of Large farms (37,5%) also indicate, that such conflicts diminish sustainability. To the greatest extent the conflicts over resources influence of agrarian sustainability in sectors Mix livestock (all farms), Field crops and Mix crop-livestock (four fifths), Grazing livestock (two thirds), and Mix crops (60%). Adverse effect of conflicts on resources is smallest in sectors Vegetables, Flowers and Mushrooms (one quarter), where the amount of employed resources in individual holding and overall is relatively small. The negative impact is most pronounced in Mountainous regions (88,89%) and in (all) farms with Lands in protected zones and territories, and less in Plain regions since in mountainous regions the amount of agrarian resources is limited and all related conflicts affect severely sustainable development. Negative impact of that factor to a greater extent is expressed in North-Central region, in comparison with studied three south regions of the country.

Only a quarter of farm managers evaluate as positive the impact of investment possibilities and obstacles at current stage in Bulgarian agriculture. For a little portion of farms (15%) that factor is neutral, neither stimulate nor deterring agrarian sustainability. For most Bulgarian holdings socio-economic and institutional environment do not provide favorable opportunities for finding investment resources or sufficient incentives for investment activity for increasing sustainability in the sector. To the greatest extent existing possibilities and obstacles for investment deter sustainability in Cooperatives (83,33%), holdings with Small sizes (86,67%), (all) farms specialized in Vegetables, Flowers and Mushrooms, and Pigs, Poultryes and Rabbits, farms with Lands in protected zones and territories (80%), located in Less-favored non-mountainous regions (75%), and North-Central region. To a lesser extent affects adversely by that factors are affected Companies (45,45%), farms with Big size (12,5%), specialized in Grazing livestock and Mix livestock (0%), and situated in Mountainous regions (44,44%), Less-favored mountainous regions (42,86%), and in South-East region (28,57%).

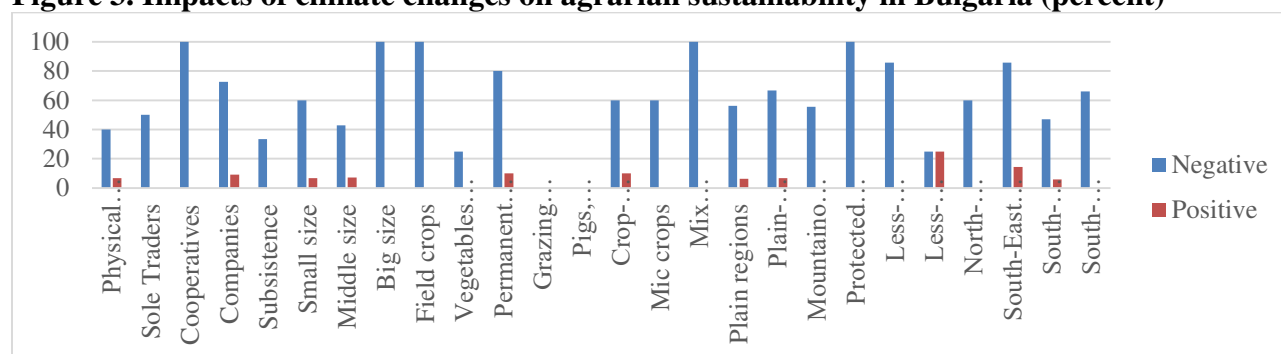
Monopoly and power positions considerably obstruct effective allocation of resources and sustainable development and that is particularly important in agriculture, where producers rarely have monopoly positions – numerous small and competing farms, inefficient national organizations for price negotiation, lack of public prices regulation, etc. Moreover, farms often face complete or partial monopoly in supply of materials, energy, credit, insurance and other services, and in marketing of produce. Our survey has proved that for merely 5% of all farms the actual situation in regards to monopoly is favorable for agrarian sustainability. The latter holdings commonly are integrated in some structures with “power” positions and benefit from its monopoly position. A significant portion of managers (32,5%) evaluate as neutral existing state regarding effects on agrarian sustainability. Such farms either trade on competitive markets with many sellers and buyers, or most of their relations are carried with local and small buyers and sellers (no monopoly).

All categories of farms, subsectors and regions suffer from the negative impact of existing monopoly and power positions. Mostly adversely affected are Sole Traders (three quarters), holdings with Middle size (78,57%), specialized in Pigs, Poultryes and Rabbits and Mix livestock (by 100%), and Permanent crops (70%), located in Plain-mountainous regions (73,33%), Less-favorite mountainous and non-mountainous (71,43% and 75%), and North-Central (80%) and South-West (71,42%) regions. To a lesser degree monopoly and power positions affects Companies (45,45%), farms with Big sizes (37,5%) and Predominately for subsistence (33,33%), specialized in Field and Mix crops (by 40%), and located in Mountainous regions (55,56%), and South-East region (42,86%).

Climate changes is an important factor often discussed as affecting positively, negatively or neutrally agricultural producers and agrarian sustainability. Our study has found out that according to the majority of surveyed farms (60%) “climate changes” are a negative factor in regards to agrarian sustainability, and its economic, social and environmental aspects. A great part of Bulgarian farms is not prepared or able to adapt to climate changes (warming, draughts, floods) through appropriate changes in production structure, technologies, organizational and governing forms which diminishes agrarian sustainability. Some managers point out that bad “management” such as incorrect zoning, agro-techniques, etc., additionally strengthen (or cause) adverse climate impacts. Only 5% of managers report that climate changes affect positively agrarian sustainability as some farms are obviously favored from climate changes. For the latter climate changes are associated with amelioration of conditions, yields growth, prolonging farming period, possibility diversify in new crops and activities. For a good portion of farms (35%) climate changes are not important in relation to agrarian sustainability. Some farmers believe that changes are not new or threaten agriculture abnormalities (rather normal fluctuations) and farms possess sufficient adaptation capability for counteraction to changes, or somehow are favored from the novel trends in climate evolution.

To the greatest extent climate changes affects negatively Cooperatives (100%) and Companies (72,73%), large and highly specialized enterprises (100%), holdings in Field (100%) and Permanent crops (80%), with Lands in protected zones and territories (100%), in Less-favored mountainous regions (85,71%), and South-East region (85,71%) (Figure 3). Adverse impact of climate changes on is not felt by none among farms specialized in Grazing livestock, and Pigs, Poultryes, and Rabbits. To a lesser degree under the influence of climate changes are holdings specialized in Vegetables, Flowers and Mushrooms, widely using greenhouses, as well as located in Less-favored non-mountainous regions (by 25%). Physical Persons (40%) are affected less negatively by climate changes comparing to other juridical types. Also holdings Predominately for subsistence (33,33%) and Middle sizes (42,25%) are less sensitive to adverse consequences of climate changes. Similarly, a smaller share of farms in Mountainous regions (55,56%) are adversely affected by climate changes in comparison with Plain and Plain-mountainous regions. Also smaller number of producers in South-Central region (47,06%) assesses as negative the impact of climate changes comparing to farms in other regions.

Figure 3. Impacts of climate changes on agrarian sustainability in Bulgaria (percent)



Source: interviews with farm managers, 2017

A great proportion of surveyed farms is also adversely affected by: “possibilities and costs for disputing rights and contracts through a legitimate way” (47,5%), “existing market competition in the country” (42,5%), “real implementation of laws, standards, etc.” (45%), “existing public sanctions (fines, punishments) for violation” (37,5%), and “informal rules, norms, modes, etc.” (35%).

Possibilities and costs for disputing of absolute and contractual rights through a legitimate way are important feature of institutional environment greatly determining opportunities for sustainable development. When there is no practical possibility to enforce (protect) legitimate rights or resolve emerging conflicts through legitimate way or costs for disputing rights on resources and contractual terms through a third party (court, administration, expertise, arbitration) are too high, then realization of economic, social, and environmental objectives of sustainable development is difficult. In Bulgarian agriculture legitimate means for disputes and conflicts resolution are actually “impossible”, inaccessible or expensive to use by a significant fraction of agents. For example, many agricultural producers complain from a delayed payment of farm produce by big buyers, processors or food chains, or untimely provision of subsidies, compensations or assistance by responsible state agencies. Often delayed payment by private or government organizations takes months, and in some cases years (e.g. compensation for damages from natural disasters), and sometimes not take place at all.

Many instances are reported, when it is too expensive or practically impossible to enforce legitimate rights on certain resources or activities through a lawful way, due to not working, slow or costly to use public system of identification, enforcement, disputing and provision of rights. In all these cases, unilateral dependent from certain buyers and/or state institutions farmers are harmed, without being able to enforce legitimate rights on resources, or get compensation for realized losses or missed benefits. When costs (for enforcement) of private contracts are enormous then agents replace the most effective governing form with less efficient, but “safer” for safeguarding investments and interests mode – restricting deals and relations with market agents, personification of trade, weaker cooperation with external agents, complete (internal) integration of transactions, targeting short-term benefits and solely own (private) profit, etc. Only for a small portion of holdings (15%) the possibilities and costs for disputing the rights and contracts through legitimate way impact positively agrarian sustainability. According to a big portion of farms (37,5%) such possibilities and associated costs are neutral in regards to sustainability. These figures indicate, that for the majority of Bulgarian holdings the official system for disputing the rights and contracts “work” well, or they possess (use) other informal and more-effective mechanisms for protection of rights and contracts – good relations, privileged and/or powerful positions, personal connections, assistance from a third party, unlawful modes, etc. Some holdings do not need to use official system of conflict resolution

due to the lack of interest or conflicts over resources and obligations with other parties – small amount of owned or used resources, absence or small number of contractual relations, etc.

Possibilities and costs for disputing the rights and contracts thorough a legitimate way are negative factor for two third of Physical Persons and every another one of Sole Traders, one third of Cooperatives, and a quarter of Companies. Apparently, latter types of enterprises possess greater possibilities for covering (often high) costs associated with protection of private rights and contractual obligations. Among smaller holdings and the biggest farms comparatively larger number feel the adverse impact due to high costs of a “unit” of contestation, lack of experience, capability, possibilities, low frequency (former type) or significant “overall” costs for multiple disputes as a result of the scale of activity, employed resources and contractual relations (latter type). Those factors musty adversely affect holdings with Mix livestock (100%), Mix crop-livestock (70%), and Field crops (60%). Among farms specialized in Permanent crops, Pigs, Poultryes and Rabbits, and Vegetables, Flowers, and Mushrooms, the negative impacts are reported by each another one. For all managers of holdings, specialized in Grazing livestock and Mix corps, that factor is positive or neutral for agrarian sustainability. In various ecosystems to the greatest extent are exposed of the negative impact farms in Less-favored mountainous regions (71,43%), Mountainous (55,56%) and Plain-mountainous (53,33%) regions. Farms located in Plain regions, and with Lands in protected zones and territories, face to a lesser extent such effect. To the biggest extent by inefficiency of the existing system suffer holdings in South-West and North-Central region (60%), while in South-Central region are affected to the least extent (35,29%). Existing regional differentiation is determined by different efficiency of the formal system of disputing of rights in each region, specific structure and efficiency of informal institutions and modes of governance, and unlike needs, challenges, contractual structure, accumulated experience, and internal capability of farms in each region and ecosystem.

Creation of environment for effective market competition in the country and individual regions is an important factor for efficient resource allocation and utilization and for governing sustainable development. A big portion of surveyed holdings (40%) report that “existing market competition in the country” impact positively agrarian sustainability and its aspects. Bulgaria is a small country and many bigger farms compete successfully with local and international producers nationwide. For the majority of interviewed managers, the type and character of market competition in the country is a negative factor for agrarian sustainability. Many farmers believe that there are not favorable conditions for loyal competition with foreign goods and domestic producers. Reasons for that are: policies for trade liberalization (including countries outside of EU), bad regulations and control for illegal import, domination of large buyers (food chains, processors, exporters, middlemen), wide informal (shadow) sector, unequal public support to agrarian subsectors and producers, etc. Many surveyed farmers report, that severe market competition leads to compromising social and environmental aspects of agrarian sustainability in order to maintain economic vitality. Examples are also given for missing or undeveloped markets for certain products such as Lucerne, silage, manure, lack of short or long term credit, etc. In all such cases, producers look for private ways for dealing with issues – own production, contraction of activity, free provision, barter or combine exchanges, illegal waste disposal, contracts for inputs supply interlinked with crediting, etc. Another reason for that problem is that still there are not developed more complex and (often) more efficient market forms as alternative of competition with current prices such as future deals, forecasting and waiting for “high” prices, long-term contracts, vertical integration. That is a result of insufficient experience, information, superior costs (harvest, storing, contracting), uncertainty and risk, etc. For a relatively small portion of farms (17,5%) market competition in the country is a neutral factor for agrarian sustainability. Those are mainly smaller producers, semi-market holdings or farms with unique

produce and guaranteed marketing (freshness, superior taste, preferred local products and varieties). having no serious competition in local scale or competing with big national or international players.

To the greatest extent adverse impact of that factor on agrarian sustainability is pointed out felt by Physical Persons (53,33%), holdings with Small size (60%), specialized in Vegetables, Flowers, and Mushrooms (75%), Grazing livestock (66,67%), Permanent crops (60%), and Pigs, Poultryes and Rabbits (50%). Latter holdings and subsectors mostly suffer from intensification of competition in the country in past years. Existing nationwide market competition is a negative factor in regards to agrarian sustainability for every another farms situated in Plain regions, for all holdings in North-Central region, and more than 50% farms in South-Central region. To adverse effect is less exposed Sole Traders (12,5%) and Cooperatives (16,67%), farms with Big sizes (25%), specialized in Field crops (20%), and in Less-favored mountainous (14,29%) and non-mountainous (25%) regions, and with Lands in protected zones and territories (20%). All these farms, subsectors, and regions are with superior comparative advantages for exploration of economies of scale and scope in production and marketing, with good competitive and negotiating positions, established reputation and effective marketing channels. Moreover, these type of holdings, productions and regions also enjoy the biggest public support – subsidies for areas of utilized lands, agro ecology, less-favored regions, etc.

In Bulgaria the entire legislation was “harmonized” with that of EU and high standards for quality, safety, environment protection, animal welfare, etc. introduced in the pre-accession period. Despite that, a big part of good laws and regulations does not work well due to bad implementation by state and private agents, insufficient control and lack of efficient mechanisms for stimulation and punishment. The biggest fraction of farmers believes that there is not supremacy of law and laws and rules are implemented equally to all and evenly around country. There are managers, according to whom “good” enforcement of certain laws and rules is not associated with real improvement of individual aspects of agrarian sustainability, due to inferior (not corresponding to needs, costly for agents, cumbersome) regulatory system. A good part of interviewed managers (37,5%) assess as neutral the impact of actual implementation of laws, standards, etc. on agrarian sustainability. In many cases, existing on paper “good” laws and standards practically “are not implemented” or incompletely applied. That consequently leads to nonfulfillment of expected results for amelioration of diverse aspects of agrarian sustainability. The smallest portion of managers (17,5%) suggests that real implementation of laws, standards, etc. is effective, and contribute to improvement of socio-economic and environmental aspects of sustainability. Those are producers, subsectors and regions, where formal laws and rules are applied and controlled well and that is associated with enhancement of agrarian sustainability. That share gives approximate insight for (little) extent of agricultural holdings in the country, in which official rules, standards, norms, etc. are implemented and controlled well.

To the greatest extent negative impact of (low) “efficiency” of the system of actual application of laws, standards, etc. is faced by Companies (54,55%), Sole Traders (50%), Physical Persons (46,67%), holdings with Small (46,67%) and Big (62,5) sizes, specialized in Vegetables, Flowers, and Mushrooms (100%), Mix livestock (100%) and Mix crop-livestock (70%). Cooperatives (16,67%), farms with Middle size (21,43%), specialized in Grazing livestock (0%), Field and Mix crops (by 20%), and Permanent crops are less affected by the adverse impact of that factor. Similarly, while only a small portion of farms in Plain-mountainous regions (26,67%) and South-East region (14,29%) report the negative impact, a comparatively greater portion of producers in Plain (56,25%) and Mountainous (55,56%) regions, and in South-West region (66,07%) are affected.

Presence, type and amount of public sanctions for violating laws, rules, norms, etc. are important factor for effective operation of institutional environment and governing activities of various agents (resources owners, producers, consumers, government administration). The biggest part of interviewed managers (45%) do not think that “existing public sanctions (fines, punishments)

for violation” affect in any way activities and actions of agents for maintaining or increasing agrarian sustainability. Existing system of sanctions does not provoke adequate behavior for amelioration of agrarian sustainability due to insufficient amount (fines, punishments) or inefficient organization (control, monitoring, correlation between sanctions and outcome, slow procedures). Only a tiny portion of holdings (17,5%) suggests that the system of public sanctions for violation works well and leads to positive results in regards to agrarian sustainability. A big proportion of farm managers evaluate as negative the impact of public sanctions for violation on agrarian sustainability. That is a result of the fact that superior and adequate sanctions are associated with increasing costs for prevention of likely violations or payments for actual violations, without however being connected with any or proportionate improvement of agrarian sustainability or its specific aspects.

Negative impact of the public sanctions for violation are mostly faced by Physical Persons (40%) and Companies (45,45%), while a quarter of Sole Traders and a third of Cooperatives are affected. The latter farms have less and unimportant violations (less frequent and smaller sanctions) or sanctions payments less affect the overall outcome of activity (a tiny share of sanctions in total costs, high return on costs for sanction payments comparing to benefits of violations). Adverse effect of public sanctions for violation is greater for Smaller size farms (46,67%) and specialized in Grazing livestock (two third), Mix crops (100%), Vegetables, Flowers, and Mushrooms, and Pigs, Poultryes, and Rabbits (by 50%). Farms with Mix livestock and Mix crop-livestock to a lesser extent are impacted by the system of public sanctions for violation (20%). The latter make less violations (a high compliance) or violations are more difficult to detect and punished, or implemented sanctions are not proportional to received benefits from breaking rules. Farms located in Mountainous (46,67%) and Plain-mountainous (44,44%) regions, and Less-favored non-mountainous regions (50%) most greatly are affected. Similarly, most farms located in South-West region 58,92%) report the negative impact, while in South-East region they are least numerous (14,29%).

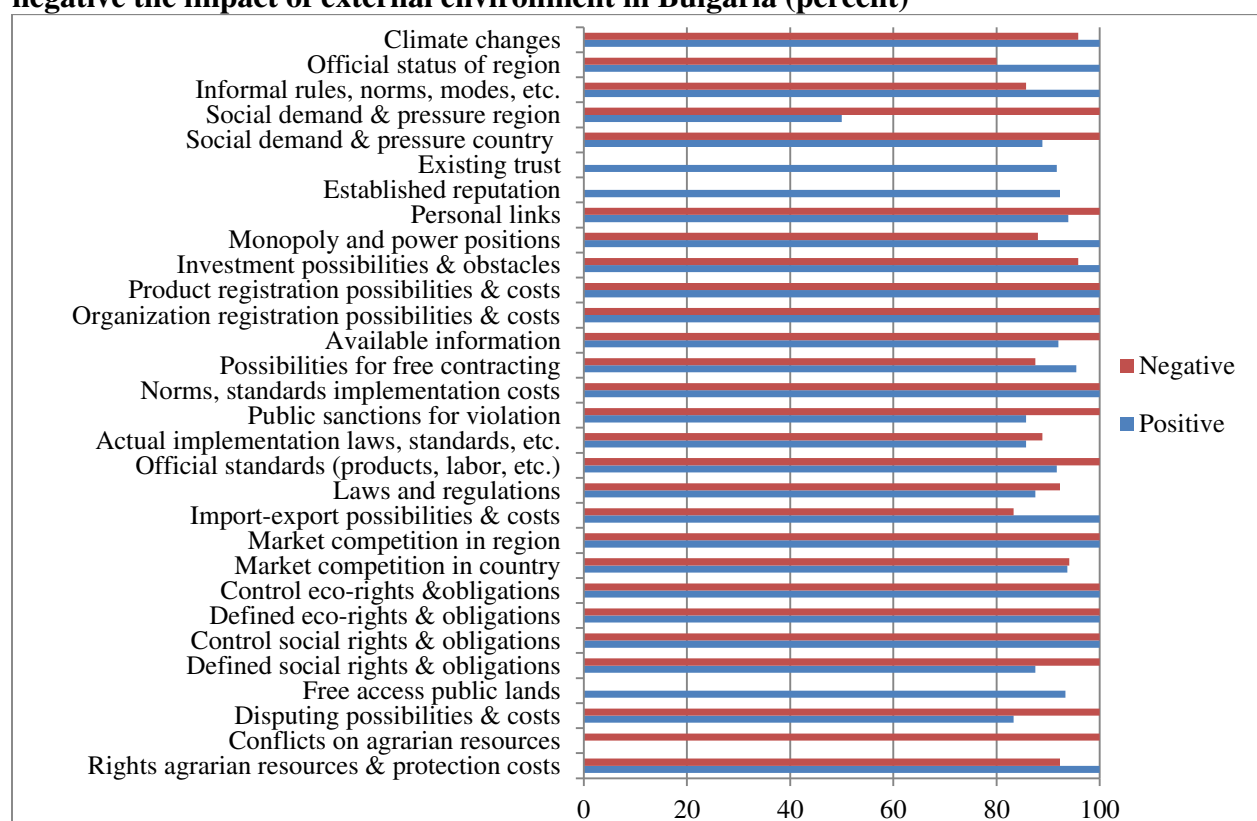
Informal institutions are important factor of institutional environment, which significantly affect the (transition) process and character of agrarian sustainability. According to 30% of surveyed managers “informal rules, norms, modes, etc.” impact positively agrarian sustainability. In agriculture traditionally dominate a great variety of informal rules, norms and forms (contracts, agreements, norms) which determine greatly relations and behavior of agents. In conditions of not well working system of formal institutions, agrarian agents widely use informal rules and forms for managing activity, and for a fraction of holdings they also assist the improvement of agrarian sustainability. A significant part of managers asses as neutral the impact of informal rules, norms, forms, etc. Along with development of the system of formal rules and markets, and improvement of control and enforcement of formal standards, norms, etc., formal institutions (greatly) replace informal one in governing relations and behavior of a fraction of agrarian agents. At the same time, a dual system of formal and informal structures punishes those complying with laws and regulations, and favor those violating them. In the country still there is no effective system for implementation and enforcement of laws, standards, and regulations, as massively applied informal (even illegal) forms for carrying activity, disputing, assets acquisition, access to public resources and support. That impedes evolution of effective (formal) structure for governing of agrarian sustainability and each of its aspects.

All categories of farms, subsectors, and regions are exposed to adverse effect of informal modes of governance. The only exceptions are Big farms and holdings specialized in Grazing and Mix livestock. In the latter groups the informal institutions “work well” assisting or not disturbing agrarian sustainability. By negative impact of widespread application of informal rules, norms and forms are most affected Sole Traders (50%), farms with Middle size (50%), specialized in Pigs, Poultryes and Rabbits (100%), Vegetables, Flowers and Mushrooms (50%), located in Plain regions (43,75%), and in South-East region (42,86%). A relatively smaller share of Physical Persons (26,67%), Cooperatives

(33,36%), holdings Predominately for subsistence (33,33%), specialized in Permanent crops and Mix crop-livestock operation (by 30%), located in Plain regions (22,22%), and North-Central region, are less affected by informal rules, norms, forms, etc. In these groups of holdings, subsectors and regions the official rules and forms dominate while informal rules are not employed or implementation is neutral or more efficient (cheap, favorable) for participating agents.

For all remaining factors of the external socio-economic environment the impact in regards to agrarian sustainability is evaluated as neutral by the majority of managers - “defined social rights and obligations” (67,5%), “efficiency of control of social rights and obligations ” (82,5%), “efficiency of control of eco-rights and obligations” (75%), “existing market competition in the region” (60%), “possibilities and costs for import and export” (57,5%), “legislative and regulatory arrangements” (47,5%), “formal standards for products, labor, etc.” (52,5%), “costs for implementation of formal and informal norms, standards, etc.” (62,5%), possibilities and costs for registration of enterprises, associations, and organizations” (70%), “possibilities and costs for registration of products, origins, activities, etc.” (72, 5%), “social needs and pressure at national scale” (62,5%), and “social needs and pressure in the region” (80%).

Figure 4. Share of farms with good and high sustainability, which evaluate as positive or negative the impact of external environment in Bulgaria (percent)



Source: interviews with farm managers, and calculation of farms sustainability, 2017

Analysis of the relations between agrarian sustainability level in the farms, and the importance that managers give to individual elements of external environment also allows evaluating the actual efficiency of different governing mechanisms for improving agrarian sustainability in the country. In regards to most components of the external institutional, market and natural environment there is no

strong correlation between superior (good and high) levels of sustainability and the (positive, negative) assessments of managers for the impact of corresponding factors (Figure 4). The only exceptions are “free access to public lands” (93,33%), “established reputation” (92,31%), and “existing trust” (91,67%), where the farms with a positive estimate for the impact of the factors demonstrate superior levels of agrarian sustainability. Apparently, for the rest elements of the external environment, the farms adapt with different degrees of a success to conditions through appropriate private, contractual and collective modes, technological and structural changes, etc. for achieving agrarian sustainability, independent of the favorable or adverse impact of considered factors. Furthermore, 30% of surveyed holdings are with inferior level of sustainability (bellow a good level), and thus hardly being able to take advantage of or adapt to the specific socio-economic, institutional and natural environment (in which they operate) to maintain or improve agrarian sustainability.

Conclusion

Our empirical study is just a first attempt to identify complex links between external institutional environment and climate changes, and level of agrarian sustainability in Bulgaria. It identified and assessed sustainability impact of important governance and natural factors in general, and in different subsectors, administrative regions, (agro)ecosystems, and type of farms. We have found that the components of governance system most contributing to improvement of agrarian sustainability at current state are: personal collections, available information for prices, markets, innovations, etc., established reputation, existing trust, and existing possibilities for free contracting. Factors mostly deterring agrarian sustainability are existing conflicts over agrarian resources, investment possibilities and obstacles, monopoly and power positions, and climate change.

Evolution of governance system and agrarian sustainability depends on various economic, political, behavioral, demographic, technological, international, natural etc. factors as well as dominating market, private, collective, public, etc. modes applied by agents. Separate and joint effects of all these important factors are to be accounted for and assessed in further research in that new area. Besides, always there is a certain “time lag” between the “improvement” of governance system, the change in agents behavior, and the positive, negative or neutral impact on the state of agrarian sustainability. All these factors are to be studied in further studies as estimates made on impact “dynamics” over a longer time horizon. Having in mind the importance of comprehensive assessments of impacts of institutional environment and climate change on agrarian sustainability, and enormous benefits for farm management and public policies, such studies are to be expended and their precision and representation increased. That requires a close cooperation between interested parties, and participation of farmers, agrarian organizations, local and central authorities, interest groups, research institutes and experts, etc. Estimates precision has to be improved, and besides on assessments of farm managers to incorporate other relevant information – expertise, studies on “actual” behavior of agents and associated “effects”, report, statistical, experimental etc. data.

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